

ABSTRACT

sub B1 > An optical heterodyne detection system includes a tunable optical pre-selector that is adjusted to track the frequency of a swept local oscillator signal. The tunable optical pre-selector is adjusted in response to a measure of the frequency of the swept local oscillator signal and in response to a measure of a portion of the swept local oscillator signal after the portion of the swept local oscillator signal has optically interacted with the optical pre-selector. In an embodiment, at least some portion of the swept local oscillator signal is modulated before it interacts with the optical pre-selector. In another embodiment, the optical pre-selector is dithered such that a dither is imparted on the portion of the swept local oscillator signal that interacts with the optical pre-selector. Whether the local oscillator signal is modulated or the optical pre-selector is dithered, the portion of the swept local oscillator signal that interacts with the pre-selector is detected and used in a feedback control circuit to generate a control signal which causes the error between the center frequency of the pre-selector and the frequency of the swept local oscillator signal to be small.

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